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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/717,975 | 11/20/2003 | James F. Cameron | 51200 | 7999 |
| 21874 | 7590 | 04/05/2007 | EXAMINER | |
| EDWARDS ANGELL PALMER & DODGE LLP | | | WALKE, AMANDA C | |
| P.O. BOX 55874 | | | ART UNIT | PAPER NUMBER |
| BOSTON, MA 02205 | | | 1752 | |
| SHORTENED STATUTORY PERIOD OF RESPONSE | | MAIL DATE | DELIVERY MODE | |
| 3 MONTHS | | 04/05/2007 | PAPER | |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| | | |
|------------------------------|-----------------------------|------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/717,975 | CAMERON ET AL. |
| | Examiner Amanda C. Walke | Art Unit 1752 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 10 January 2007.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1, 22, 61-64, and 68-70 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1, 22, 61-64, and 68-70 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____

5) Notice of Informal Patent Application
6) Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 22, 61-64, and 68-70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Motoyama (EP 408334) in view of Knors et al (5,800,963) and Thackeray et al (5,851,738).

Motoyama et al disclose a resist comprising of a mixture of either poly 4,4,6,6-tetramethyl-4,6-disila-heptyne or poly 4,4,7,7-tetramethyl-4,7-disila-2-octyne as a host polymer and an additional reagent having at least a radical reactive on the double bond of the host polymer, and a patterning process using this resist, particularly as a top patterning resist in a bilayer system (abstract).

According to example 1, the novolac underlayer (which the reference teaches may be any known underlayer), is spin coated and baked onto the substrate then the resist layer containing the silicon-containing component is applied and patterned. While the reference teaches that any suitable polymers may be employed for the underlayer of the bi-layer resist system, and provides examples, the reference is silent with respect to the additional components of this underlayer.

Knors et al has been discussed above and teaches a composition and methods for the use and manufacture thereof are provided for a polymeric dye. The composition comprises one or more aminoaromatic chromophores in conjunction with polymers having an anhydride group or the reaction products thereof. The composition is particularly useful as an underlaying

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antireflective coating with microlithographic photoresists for the absorbtion of near or deep ultraviolet radiation. The antireflective film of the invention has improved dry etching properties.

Given the teachings of the references, it would have been obvious to one of ordinary skill in the art to prepare the material of Motoyama choosing to employ the polymers of Knors et al to increase the dry etching properties of the layer, with expectation of achieving a material having high resolution and sensitivity.

The Motoyama et al reference further fails to specifiy additional, conventional components of the underlayer such as a crosslinker.

Thackeray et al disclosing an anti-reflective underlayer for use in a bi-layer resist system having similar materials to the underlayers of the primary (and secondary) references. The reference teaches that conventional components of these layers include crosslinkers. Known crosslinkers include benzoguanamine and melamine.

Given the teachings of the references, it would have been obvious to one of ordinary skill in the art to prepare the material of Motoyama in view of Knors et al choosing to employ the conventional crosslinkers of Thackeray et al, with expectation of achieving a material having high resolution and sensitivity.

Response to Arguments

3. Applicant's arguments filed 1/10/2007 have been fully considered but they are not persuasive. Applicant has argued that the underlayer of the references fails to teach the presence of multiple resins. The layer of the primary reference teaches a phenolic resin, and the Knors reference provided motivation to include an additional resin which comprises polymeric dyes (anthracene) in an acrylic resin to achieve the advantageous result of high resolution and

sensitivity (the resultant layer would comprise multiple resins). The examiner has taken the position that it would have been obvious to one of ordinary skill in the art to add the resin of Knors taught to be employed as an underlayer for a bilayer resist, and applicant has not demonstrated that the resultant composition would not provide this result or be able to function with a resist that comprises silicon.

Applicant has again argued that the resist is negative and not positive. The examiner responded to this argument in the previous office action, and maintains her position.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amanda C. Walke whose telephone number is 571-272-1337. The examiner can normally be reached on M-R 5:30-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Amanda C Walke
Primary Examiner
Art Unit 1752

ACW
March 31, 2007

Amanda C Walke
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PRIMARY EXAMINER

AMANDA WALKE
PRIMARY EXAMINER